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PUBLIC HEALTH REPORTS

VOL. 36 SEPTEMBER 16, 1921 No. 37

TYPHOID OUTBREAK ORIGINATING IN A CARRIER.

OUTBREAK ON STEAMSHIP SHOWS IMPORTANCE OF THOROUGH EXAMINATION BEFORE DISCHARGE OF TYPHOID PATIENTS.[1]

By W. T. Harrison, Passed Assistant Surgeon, United States Public Health Service.

During the period from May 25 to June 21, 1921, 10 members of the crew of the steamship *Lake Gunni* were admitted to the United States Marine Hospital at San Francisco, suffering from typhoid fever. Two seamen were admitted on May 25, one seaman on the 26th, one seaman and one fireman on the 27th, the boatswain on the 30th, one fireman on June 2, two seamen on June 6, and one mess boy on June 21. Upon admission of the first cases the medical officer in charge of the hospital requested that an investigation be made to determine the source of the infection. This inquiry was undertaken May 27.

The *Lake Gunni* is a Shipping Board freighter, carrying a crew of 32, divided as follows: Deck, 14; engine room, 12; steward's department, 6. There are two main living quarters aboard: one amidships, in which live the officers and members of the steward's department, totaling 15; the other in the forecastle, which on ships of this type is located aft, where 8 seamen, 5 firemen, and 3 oilers live. The boatswain lived forward alone. The galley, where food for the entire personnel is prepared, is located amidships, and all food is prepared by the same cooks.

The vessel sailed from New Orleans April 29, arrived at the Canal May 6, sailed from Balboa May 7, arrived at San Pedro, Calif., May 22, and at San Francisco May 25.

It was immediately established that the infection was acquired on board ship, since of the three cases first admitted to hospital only one had gone ashore during the voyage (at Balboa for a few hours), the other two having remained continuously on board. The man who went ashore at Balboa insisted that he took no food, but acknowledged having taken liquor and water.

The fresh-water tanks were filled at New Orleans, Balboa, and San Pedro. Ice was taken on at New Orleans and Balboa, and steward's stores, including fresh meat and vegetables, were taken at New Orleans only. No fresh milk was taken at any port. Upon arrival at San Francisco all ice and fresh vegetables taken on at New Orleans had been consumed. Samples of ice taken at Balboa were collected and examined, as were also samples of water from the fresh-water tanks. These examinations were entirely negative. Although the tanks were filled three times on the voyage, it is very probable that any supply sufficiently contaminated to produce an epidemic of this high incidence would leave evidence in the tanks until they were properly treated to remove it.

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[1] A brief account of this outbreak was published in Public Health Reports, July 8, 1921.

At the time when the examination into the water and ice supply was completed a total of six cases had been admitted to the hospital, all of these, except the boatswain, living in the forecastle. No member of the crew living amidships showed symptoms of typhoid; and so it was evident that the source of the infection must be found in the forecastle, as the cooks and mess boys served all members of the crew alike.

A carrier among the personnel living in the forecastle was strongly suggested, and each man was carefully questioned as to his personal history. A fireman (H. E.) gave a history of typhoid beginning February 23, 1921. He had been discharged from a New Orleans hospital on April 26, one day before joining the vessel. This man was placed in the hospital and a pure culture of *B. typhosus* was isolated from his urine in 24 hours. As this fireman had nothing to do with the preparation or handling of food, it was necessary to establish a very intimate personal contact with his fellows to explain a typhoid incidence of 10 cases in 32 men.

Upon investigation of the after living quarters it was found that each man is provided with a galvanized iron pail in which he washes his face and hands, takes his bath, and launders his clothes. All agreed, when questioned, that it was the rule to interchange pails, and that the use of the same water, both for personal and laundry purposes, was very common. Towels were also used in common. All ate at the same table, the carrier handling food containers after they were brought to the table, as did the others. It is readily understood how a renal carrier could, under these conditions, disseminate the infection.

Eight of the 10 cases developing on board lived in the forecastle, and the boatswain, although he slept forward, spent most of the day in intimate contact with the forecastle personnel. The mess boy, the tenth case, admitted June 21, was the only person living amidships to become ill, the disease in this case developing 15 days subsequently to the ninth case. He was one of the force detailed on June 1 to scrub the forecastle and remove infected bedding and utensils, and since symptoms first appeared on June 17, it is very probable that he acquired the infection at the former date, through failure to follow instructions relative to the proper disinfection of his hands upon completion of the work.

B. typhosus was isolated from the blood of five cases, and all gave positive agglutination reactions varying from 1 to 200 to 1 to 1,000 in the third week of the disease. None gave a history of antityphoid vaccination. One case terminated fatally from hemorrhage at the end of the third week.

After the removal of the carrier, the forecastle and the boatswain's quarters were thoroughly washed with antiseptic solutions followed by hot water and soap; the bedding, towels, utensils, etc., were sterilized with steam. No new cases have occurred since the termination of the incubation period.

This outbreak of a small number of cases, but of exceedingly high incidence, shows the extreme importance of thorough examination of both feces and urine before the discharge of typhoid patients. It is also of interest to note that a carrier engaged in occupations other than food handling may, under certain circumstances, be responsible for the transmission of the disease.

THE VALUE OF CERTAIN INQUIRIES ON VENEREAL DISEASE CASE REPORTS.[1]

A Study of 8,413 Case Reports in Indiana.

In the expectation of obtaining facts that may be useful in the campaign against venereal diseases, the individual case report card has been made somewhat detailed in practically all States where venereal diseases are notifiable. Ordinarily the following items of information are asked of the attending physician for every case:

Color
Nativity (or race)
Sex
Age
Marital condition
Occupation
} of the patient.

Stage
Source of infection
When contracted
Date of infection
Diagnosis, with result of such laboratory test as may have been made
} of the disease.

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[1] From the Statistical Office (Field Investigations), United States Public Health Service. Prepared in cooperation with the Division of Venereal Diseases, United States Public Health Service. Acknowledgments are made to the Indiana State board of health for the use of the individual case reports.